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To the east the landscape, dotted here and there with farmhouses, stretches in gentle undulations until lost from view beyond the hills of Grouse creek.

Geologically, the mounds are situated on the highest massive limestone in the Permian of the region, probably referable to the *Pleurophorus* limestone of Prosser.

On December 21, 1896, a party composed of members of the Cowley County Historical Society drove from Winfield to the mounds for the purpose of making investigations. The investigations were confined to three mounds, and a number of valuable relics were found. The mounds, which have been greatly worn down, are circular in shape, from 20 to 30 feet in diameter, and from 2 to 5 feet high in the center. At the depth of from 1 to 3 feet from the surface, fragments of charcoal began to be found; these increase with the depth, until at from 4 to 10 feet deep, the soil is in a great measure replaced by charcoal and ashes. Intermingled with this charcoal are found broken pieces of pottery, apparently formed of broken shells mixed with clay and baked. No entire vessels have been found; but, judging from the fragments, they were shaped like a deep tin wash-basin, probably 6 inches deep and 10 to 12 inches in diameter. Several handles resembling those of a jug were found. The pottery is usually blackened with fire on one side, showing that it has been used.

Besides pottery were found a number of implements, including stone hammers and axes, mortars for grinding grain, flattened stones for dressing skins, flint arrow-heads and axes, and grooved stones, apparently for sharpening instruments, numerous flakes of flint, also two species of *Unio*, the bones of the following mammals: buffalo, elk, deer, rabbit, two species of mice, coyote, together with remains of tortoise, a gallinaceous bird, and fish.

Scattered over the mounds were a great quantity of Tertiary pebbles, which are not found nearer than the Arkansas river, three miles distant.

A few years since a cellar was dug on the site of one of these mounds, and a gentleman informed us that a half bushel of stone axes were thrown out in the loose dirt and carried away by people in the vicinity. It is to be regretted that these relics, which are of no little scientific value, should be lost by those who have so little appreciation of their importance.

BARITE NODULES IN WOOD.

By E. B. KNERR, Atchison, Kan. Read before the Academy December 31, 1896.

In digging a well during the summer of 1896 near Midland College, the workmen brought up some bits of wood from a depth of 40 feet. A peculiarity in the wood was the presence of many little white spheres, ranging from a thirty-second to an eighth of an inch in diameter. The material was crystalline in structure, the crystals radiating from the centers of the spheres, and chemical analysis proved it to be barite. The appearance of the wood fibers is as if they had been formed around the spheres. Whatever was the occasion of the peculiar growth, evidently the barite was a subsequent deposit in the cavities.

A careful separation of the material, to get it as pure as possible, gave the following analysis:

SiO ₂ and gangue.....	4.00	per cent.
SO ₃	33.25	"
BaO.....	62.17	"
CaO.....	.50	"
Total.....	99.92	per cent.

Subtracting the silica and gangue, and recalculating, the following per cents. are obtained :

SO ₃	34.64	per cent.
BaO.....	64.76	"
CaO.....	.50	"
Total.....	99.90	per cent.

The theoretical composition of barite is :

SO ₃	34.33	per cent.
BaO.....	65.67	"
Total.....	100.00	per cent.

The specific gravity of the nodules was 4.55 ; color, ash white.

ON THE ALKYL HYPOBROMITES. R - O - Br.

F. W. BUSHONG, Emporia, Kan. Read before the Academy December 31, 1896.

About 10 years ago Sandmeyer first prepared and described* methyl hypochlorite and ethyl hypochlorite, but, possibly on account of their unstable and explosive nature, no further attempts were made to use them in the synthesis of other compounds.

In a study of cyanimidomethylcarbonate† and other imidoethers, undertaken about two years ago at the suggestion of Dr. J. U. Nef, these alkyl hypochlorites proved to be very valuable. Since the acid bromides are frequently much more reactive than the acid chlorides, it was to be expected that the alkyl hypobromites would be much more valuable reagents than the corresponding hypochlorites. Experiments were therefore begun in the hope of preparing such hypobromites.

ETHYL HYPOBROMITE. C₂ H₅ - O - Br.

Several attempts to prepare ethyl hypobromite from alcohol and hypobromous acid, prepared in the usual way from oxide of mercury and bromine, failed.

Fifty g. potassium bromide, 25 g. caustic soda and 25 g. alcohol were then dissolved in 250 c. c. water, and put into a wide thin-walled inner tube of a glass condenser, which was closed below by a three-way stopcock. Ice-water was kept flowing through the apparatus, and the temperature of the solution thus kept below -5° C. Washed chlorine gas, free from air, was passed in through the stopcock, the apparatus being inclined at an angle of about 15° from the horizontal, so that the bubbles would rise slowly through the liquid.‡ As the bubbles of chlorine diminished in size through absorption, small globules of a red oil grew beneath them. This oil formed a layer at the bottom, but decomposed before it could be removed from the apparatus, although if left there undisturbed and kept cold it could be kept nearly half an hour.

Ethyl hypochlorite, which floats on water, was shaken up with a dilute solution of potassium bromide, which was kept below -8° C. Drops of ethyl hypobromite collected at the bottom, but exploded instantly, though not violently, when the mother-solution was poured off. A number of schemes were tried in order to weigh a portion for analysis, but none were successful.

* Bericht d. deutsch. chem. Ges. 19, 857.

† cf. Nef, Cyanimidoethylcarbonate, Liebig's Ann. 287, 274.

‡ Sandmeyer, loc. cit.